

The work deals with the quantitative evaluation of the influence of the nature of the porosity of chromium plating on the wear of type P16 in 1 mol/l and 10 mol/l solutions.

KHRUSHCHOV, M.M.

KHRUSHCHOV, M.M.; BABICHEV, M.A.

Friction-wear testing of metals in the presence of liquid media.

Tren. i izn. mash. no.10:35-69 '55.

(MIRA 8:11)

(Mechanical wear) (Bearings (Machinery))

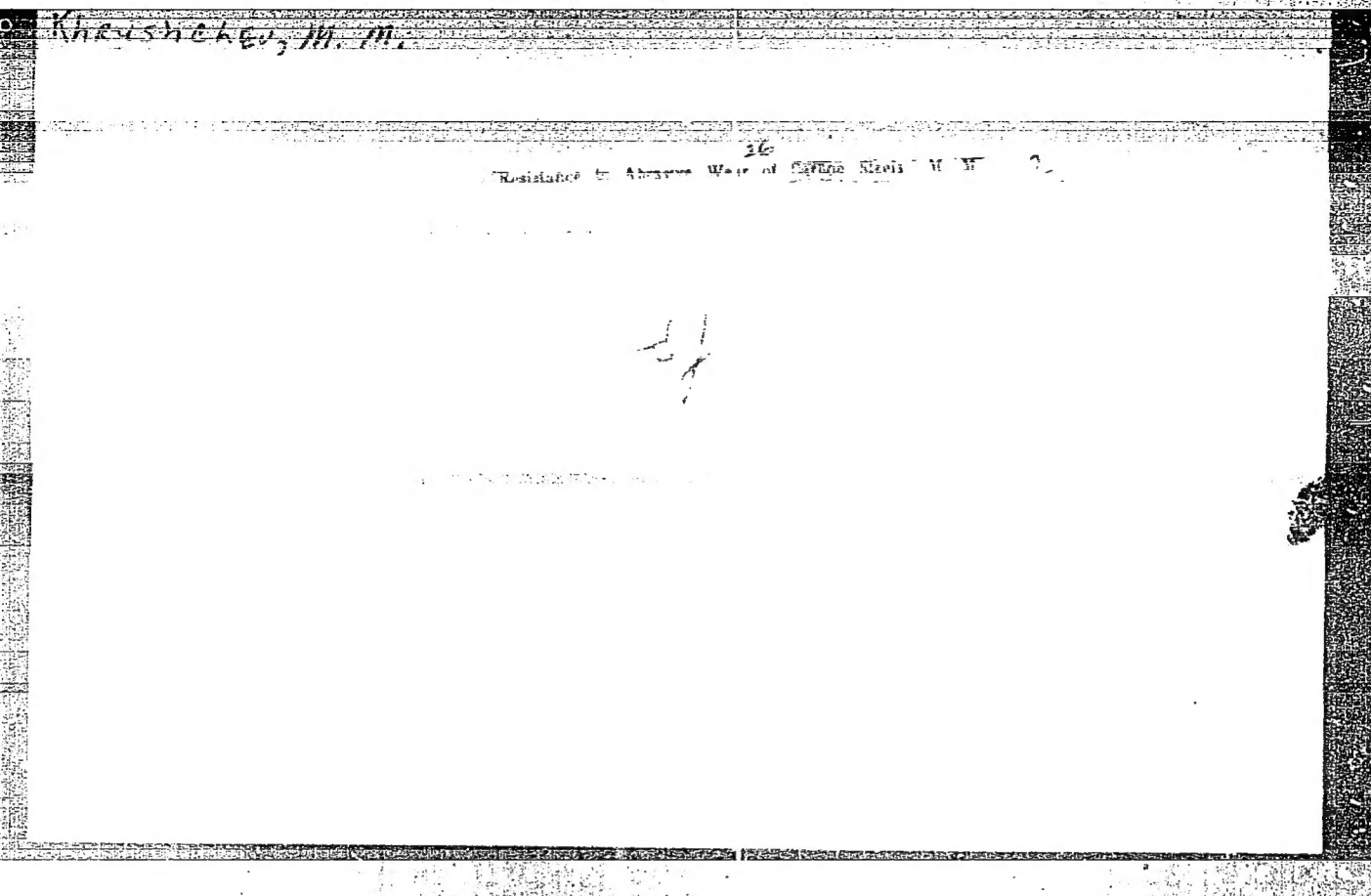
KHRUSHCHOV, M.M.; BABICHEV, M.A.; DUBININ, G.N.

Investigation of the wear resistance of carbon steel varieties
in the presence of certain liquids following chromium spraying
in gases. Tren.i izn.mash. no.10:70-81 '55. (MLRA 8:11)
(Mechanical wear) (Bearings (Machinery))

KHRUSHCHOV, M.M.

KHRUSHCHOV, M.M.; BABICHEV, M.A.

Resistance to abrasive wear in cast iron of various composition and
structure. Tren. i izn. mash. no.10:82-90 '55. (MIRA 8:11)
(Mechanical wear) (Bearings (Machinery))



deposited on the winter face of snowdrifted dunes.

Khrushchov, M.M.

USSR/Chemistry - Viscosity

Card 1/1 Pub. 124 - 8/45

Authors : Khrushchov, M. M. Dr. of Tech. Sc., and Matveyevskiy, R. M., Cand. of
Tech. Sc.

Title : The thermal criterion in evaluating the lubricity of oils

25, No. 2

Periodical : Vest. AN SSSR 2, 47-50, Feb 1955

Abstract : Announcement is made by the Wear-Resistance Laboratory of the Institute
of Machine Construction on the development of a new method for testing
the lubricity and viscosity characteristics of lubricating oils by deter-
mining the critical temperature of the boundary layer. The new method
makes it possible not only to establish the critical temperature of various
mineral oils but also to estimate the effect of polar and chemical
additions on the lubricating properties of the oils. Graphs; drawing.

Institution :

Submitted :

Р.Н. Чуховский, М.М.

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✓ Resistance of cold-worked metals and alloys to abrasive wear. M. M. Chukhovsky and M. A. Ivanov. *Metallurgiya*, 1955, No. 10, p. 1000-1002. (USSR) The authors investigated the resistance of cold-worked metals and alloys to abrasive wear. The specimens were covered with an abrasive cloth while being in the state of cold deformation. A standard test specimen was used. The results of the tests are given in the table. The authors conclude that the resistance of cold-worked metals and alloys to abrasive wear increases with increasing cold deformation and is not affected by the type of cold deformation. No difference in abrasion resistance as a function of cold deformation was found.

В.И. 1.1

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CHAPKEVICH, V.A., kandidat tekhnicheskikh nauk; OSIPYAN, A.V., kandidat tekhnicheskikh nauk, redaktor; KOZLOVSKIY I.S., kandidat tekhnicheskikh nauk, redaktor; ZIL'BERBERG, Ya.G., inzhener, redaktor; BRILING, N.B., professor, doktor tekhnicheskikh nauk, redaktor; KALISH, G.G., professor, doktor tekhnicheskikh nauk, redaktor; PEVZNER, Ya.M., professor, doktor tekhnicheskikh nauk, redaktor; KHRUSHCHOV, M.M., doktor tekhnicheskikh nauk, professor, redaktor; RAMAYYA, K.S., doktor tekhnicheskikh nauk, redaktor; LIPGART, A.A., professor, redaktor; PRIADILOV, V.I., kandidat tekhnicheskikh nauk, redaktor; ROZANOV, V.G., kandidat tekhnicheskikh nauk, redaktor; CHISTOZVONOV, S.B., inzhener, redaktor; UVAROVA, A.F., tekhnicheskii redaktor.

[Investigation of the operation of the IaAZ engine] Issledovanie rabochego protsessa dvigatelya IaAZ. Moskva, Gos.nauchno-tekhn. izd-vo mashino-stroitel'stva, 1956. 41 p. (Moscow. Gosudarstvennyi nauchno-issledovatel'skii avtomobil'nyi i avtemotorny institut. [Trudy], no.79)

(MIRA 10:3)

1. Direktor Nauchno-issledovatel'skogo avtomobil'nogo instituta (for Osipyan)
2. Zamestitel direktora Nauchno-issledovatel'skogo avtomobil'nogo instituta po nauchnoy rabote (for Kozlovskiy)
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(Automobiles--Engines)

KHRUSHCHEV, M.M.

RAMAYYA, K.S., doktor tekhnicheskikh nauk; SIL'S, R.Kh., inzhener;
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 nauk, zamestitel' otvetsvennogo redaktora; ZIL'BERBERG, Ya.G.,
 inzhener, sekretar'; BRILING, N.R., professor, doktor tekhnicheskikh
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 dat tekhnicheskikh nauk; CHISTOZVONOV, S.B., inzhener; BROMSH, V.V.,
 zaveduyushchiy redaksiyey, inzhener; UVAROVA, A.F., tekhnicheskii
 redaktor; OSIPIYAN, A.F., kandidat tekhnicheskikh nauk, etretatsvennyy
 redaktor.

[Method of determining the potential corrosion properties of lubri-
 cants] Metod opredeleniya potentsial'noi korrozionnosti masel. Mo-
 skva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry.1956 49 p.
 (Moscow. Gosudarstvennyi nauchno-issledovatel'skii avtomobil'nyi
 i avtomotornyi institut. [Trudy], no. 80) (MLRA 10:1)

1. Direktor Nauchno-issledovatel'skogo avtomotornogo instituta (for
 Osipyan). 2. Zamestitel' direktora Nauchno-issledovatel'skogo
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 korrespondent Akademii nauk SSSR (for Briling).
 (Lubrication and lubricants) (Corrosion and anticorrosives)

MATVEYEVSKIY, R.M.; KHRUSHCHOV, M.M., professor, otvetstvennyy redaktor;
TIMOV, A.A., redaktor izdatel'stva; YEGOROV, V.I., redaktor izdatel'stva;
MAKUNI, Ye.V., tekhnicheskii redaktor

[The temperature method of estimating the maximum lubrication potentials of machine oils] Temperaturnyi metod otsenki predel'noi smazochnoi sposobnosti mashinnykh masel. Moskva, Izd-vo Akademii nauk SSSR, 1956. 140 p.
(Lubrication and lubricants) (MLRA 9:7)

KHRUSHCHOV, M.M., doktor tekhnicheskikh nauk, professor, redaktor;
PODOLNAYA, K.A., inzhener, redaktor; MATVEYEVA, Ye.N., tekhnicheskii redaktor

[Increasing the durability of ploughshares] Povyshenie iznoso-stoikosti lemkhov. Pod obshchei red. M.M.Khrushchova, Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1956. 218 p.

(MIRA 9:9)

1. Akademiya nauk SSSR. Institut mashinovedeniya.
(Plows)

KHRUSHCHOV, M.M., professor, doktor tekhnicheskikh nauk, redaktor;
MARTENS, S.L., inzhener, redaktor; MODEL', B.O., tekhnicheskii
redaktor; SOKOLOVA, T.F., tekhnicheskii redaktor

[Increasing the durability of machinery; a collection of articles]
Povyshenie dolgovechnosti mashin; sbornik statei. Moskva, Gos.
nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1956. 494 p. (MLRA 9:10)
(Machinery--Maintenance and repair)

AVRASIN, Ya.D., kandidat tekhnicheskikh nauk; BERG, P.P., professor, doktor tekhnicheskikh nauk, BERNHSHTEYN, M.L., kandidat tekhnicheskikh nauk; GEMEROZOV, P.A., starshiy nauchnyy sotrudnik; GLINER, B.M., inzhener; DAVIDOVSKAYA, Ye.A., kandidat tekhnicheskikh nauk; YELCHIN, P.M., inzhener; YEREMIN, N.I., kandidat fiziko-matematicheskikh nauk; IVANOV, D.P., kandidat tekhnicheskikh nauk; KNOROV, L.I., inzhener; KOBRIN, M.M., kandidat tekhnicheskikh nauk; KORITSKIY, V.G., dotsent; KROTKOV, D.V., inzhener; KUDRYAVTSEV, I.V., professor, doktor tekhnicheskikh nauk; KULIKOV, I.V., kandidat tekhnicheskikh nauk; LEPETOV, V.A., kandidat tekhnicheskikh nauk; LIKINA, A.F., inzhener; MATVEYEV, A.S., kandidat tekhnicheskikh nauk; MIL'MAN, B.S., kandidat tekhnicheskikh nauk; PAVLUSHKIN, N.M., kandidat tekhnicheskikh nauk; PITTSYN, V.I., inzhener [deceased]; RAKOVSKIY, V.S., kandidat tekhnicheskikh nauk, RAKESHTADT, A.G., kandidat tekhnicheskikh nauk; RYABCHENKOV, A.V., professor, doktor khimicheskikh nauk; SIGOLAYEV, S.Ya., kandidat tekhnicheskikh nauk; SMIRYAGIN, A.P., kandidat tekhnicheskikh nauk, SUL'KIN, A.G., inzhener; TUTOV, I.Ye., kandidat tekhnicheskikh nauk, ~~KHRUSHCHOV, M.M.~~, professor, doktor tekhnicheskikh nauk; TSYPIN, I.O., kandidat tekhnicheskikh nauk; SHAROV, M.Ya., inzhener; SHERMAN, Ya.I., dotsent; SHMELEV, B.A., kandidat tekhnicheskikh nauk; YUGANOVA, S.A., kandidat fiziko-matematicheskikh nauk; SATEL', E.A., doktor tekhnicheskikh nauk, redaktor; SOKOLOVA, T.F., tekhnicheskii redaktor

[Machine builder's reference book] Spravochnik mashinostroitel'ia; v shesti tomakh. izd-vo mashinostroit. lit-ry. Vol.6. (Glav. red.toma E.A.Satel'. Izd. 2-oe, ispr. i dop.) 1956. 500 p. (MLRA 9:8)
(Machinery--Construction)

THROSTON M.M.

AL'TGAUZEN, O.N., kandidat fiziko-matematicheskikh nauk; BERNSHTEYN, M.L., kandidat tekhnicheskikh nauk; BLANTER, M.Ye., doktor tekhnicheskikh nauk; BOKSHTEYN, S.Z., doktor tekhnicheskikh nauk; BOLKHOVITINOVA, Ye.N., kandidat tekhnicheskikh nauk; BORZDYKA, A.M., doktor tekhnicheskikh nauk; BUNIN, K.P., doktor tekhnicheskikh nauk; VINOGRAD, M.I., kandidat tekhnicheskikh nauk; VOLOVIK, B.Ye., doktor tekhnicheskikh nauk [deceased]; GAMOV, M.I., inzhener; GELLER, Yu.A., doktor tekhnicheskikh nauk; GORELIK, S.S., kandidat tekhnicheskikh nauk; GOL'DENBERG, A.A., kandidat tekhnicheskikh nauk; GOTLIB, L.I., kandidat tekhnicheskikh nauk; GRIGOROVICH, V.K., kandidat tekhnicheskikh nauk; GULYAYEV, B.B., doktor tekhnicheskikh nauk; DOVGALYEVSKIY, Ya.M., kandidat tekhnicheskikh nauk; DUDOVTSYEV, P.A., kandidat tekhnicheskikh nauk; KIDIN, I.N., doktor tekhnicheskikh nauk; KIPNIS, S.Kh., inzhener; KORITSKIY, V.G., kandidat tekhnicheskikh nauk; LANDA, A.F., doktor tekhnicheskikh nauk; LEYKIN, I.M., kandidat tekhnicheskikh nauk; LIVSHITS, L.S., kandidat tekhnicheskikh nauk; L'VOV, M.A., kandidat tekhnicheskikh nauk; MALYSHEV, K.A., kandidat tekhnicheskikh nauk; MEYERSON, G.A., doktor tekhnicheskikh nauk; MINKOVICH, A.N., kandidat tekhnicheskikh nauk; MOROZ, L.S., doktor tekhnicheskikh nauk; NATANSON, A.K., kandidat tekhnicheskikh nauk; NAKHIMOV, A.M., inzhener; NAKHIMOV, D.M., kandidat tekhnicheskikh nauk; POGODIN-ALEKSEYEV, G.I., doktor tekhnicheskikh nauk; POPOVA, N.M., kandidat tekhnicheskikh nauk; POPOV, A.A., kandidat tekhnicheskikh nauk; RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk; ROZEL'BERG, I.L., kandidat tekhnicheskikh nauk;

(Continued on next card)

AL'TGAUZEN, O.N.----- (continued) Card 2.

SADOVSKIY, V.D., doktor tekhnicheskikh nauk; SALT'YKOV, S.A., inzhener; SOBOLEV, N.D., kandidat tekhnicheskikh nauk; SOLODIKHIN, A.G., kandidat tekhnicheskikh nauk; UMANSKIY, Ya.S., kandidat tekhnicheskikh nauk; UTEVSKIY, L.M., kandidat tekhnicheskikh nauk; FRIDMAN, Ya.B., doktor tekhnicheskikh nauk; KHIMYSHIN, Y.F., kandidat tekhnicheskikh nauk; ~~KHIMYSHIN, M.M.~~, doktor tekhnicheskikh nauk; CHERNASHKIN, V.G., kandidat tekhnicheskikh nauk; SHAPIRO, M.M., inzhener; SHKOL'NIK, L.M., kandidat tekhnicheskikh nauk; SHRAYBER, D.S., kandidat tekhnicheskikh nauk; SHCHAPOV, N.P., doktor tekhnicheskikh nauk; GUDTSOV, N.T., akademik, redaktor; GORODIN, A.M., redaktor izdatel'stva; VAYNSHTAYN, Ye.B., tekhnicheskiy redaktor

[Physical metallurgy and the heat treatment of steel and iron; a reference book] Metallovedenie i termicheskaya obrabotka stali i chuguna; spravochnik. Pod red. N.T.Dudtsova, M.L.Bernshteina, A.G. Rakhshadt. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 1204 p. (MLRA 9:9)

1. Chlen -korrespondent Akademii nauk USSR (for Bunin)
(Steel--Heat treatment) (Iron--Heat treatment)
(Physical metallurgy)

SHKOL'NIKOV, E.M., kand.tekhn.nauk; LEVITAN, M.M., inzh.; OSIPYAN, A.V.,
kand.tekhn.nauk, red.; KOZLOVSKIY, I.S., kand.tekhn.nauk, zamestitel'
otvetstvennogo red.; BRILING, N.R., doktor tekhn.nauk, prof., red.;
KALISH, G.G., doktor tekhn.nauk, prof.; LIPGART, A.A., prof., red.;
PEVZNER, Ya.M., doktor tekhn.nauk, prof., red.; PRYADILOV, V.I., kand.
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doktor tekhn.nauk, prof., red.; CHISTOZVONOV, S.B., inzh., red.;
ZIL'BERBERG, Ya.G., inzh., red.; YEGORKINA, L.I., red.izd-va;
UVAROVA, A.F., tekhn.red.

[Using chromium-silicon alloys in manufacturing automobile engine
sleeves] Khromokremnistyi splav dlia gil'z avtomobil'nykh dvigatelei.
Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1957. 78 p.
(Moscow. Gosudarstvennyi nauchno-issledovatel'skii avtomobil'nyi i
avtomotornyi institut. Trudy no.81)

1. Direktor Gosudarstvennogo soyuznogo ordena Trudovogo Krasnogo
Znameni nauchno-issledovatel'skogo avtomobil'nogo i avtomotornogo
instituta (for Osipyan). 2. Zamestitel' direktora Gosudarstvennogo
soyuznogo ordena Trudovogo Krasnogo Znameni nauchno-issledovatel'skogo
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(Chromium-silicon alloys) (Automobiles--Engines--Cylinders)

137-58-1-1787

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 243 (USSR)

AUTHORS: Khrushchov, M. M., Babichev, M. A.

TITLE: An Investigation of Wear in Metals and Alloys Due to Friction Over an Abrasive Surface (Issledovaniye iznashivaniya metallov i splavov pri trenii ob abrazivnuyu poverkhnost')

PERIODICAL: Treniye i iznos v mashinakh. Sb. 11, Moscow, AN SSSR, 1956, pp 5-18

ABSTRACT: An investigation into the wear resistance on friction with an abrasive surface of the following has been made: a) technically pure Co, Mo, Cr, Be, W, and heat-treated steels U8 and ShKh15; b) technically pure Al, Cu and Ni, L60 brass, AZh9-4 bronze, and steel (C O, 16 percent), work hardened after annealing; c) electrically deposited Cr, tempered at various temperatures; d) certain materials of high hardness (1000 kg/mm² and over) [cast W carbides, sormite Nr 1, carbon steel containing 0.65 percent C subjected to chromium plating by thermal diffusion, electrolytically boron-plated (EB) steel, silicon (Kr2) and super-hard alloys VK6, VK8 and VK15]. The results of the tests are presented in the form of the relationship of relative resistance to wear ϵ and

Card 1/2

137-58-1-1787

An Investigation of Wear in Metals and Alloys (cont.)

hardness H. Confirmation is obtained for the previously-derived laws governing the relationship of ϵ and H for technically pure metals and heat-treated steel, with the exception of Si, the ϵ of which prove to be 91 percent smaller than should have been the case with metal having that H. In the case of the work-hardened metals and alloys, ϵ remains practically the same as for the annealed state, despite the elevated H due to work-hardening. The direct relationship between ϵ and H found in the case of the pure metals is also valid for certain metal carbides. In the case of structurally non-homogeneous metallic materials, differing widely as to the properties of the elements composing them, ϵ is significantly lower than that corresponding to the same H for pure metals. See also RzhMet, 1956, Nr 9, abstract 9367.

1. Steels—Friction—Resistance results 2. Steels—Test methods 3. Steels—Test results A. M.

Card 2/2

SOV/137-57-6-11123

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 6, p 248 (USSR)

AUTHORS: Khrushchov, M.M., Babichev, M.A.

TITLE: Investigation of the Effect of Hardness of the Abrasive on the Wear of Metals (Issledovaniye vliyaniya tverdosti abrasiva na iznos metallov)

PERIODICAL: Treniye i iznos v mashinakh. Nr 11. Moscow, AN SSSR, 1956, pp 19-26

ABSTRACT: To clarify the problem posed an investigation was conducted on the wear (W) of specimens of U8-grade steel, quenched and tempered to a hardness H from 186 to 795 kg/mm² upon friction on electro-corundum (grain size 180 and 170, H of the grains 2290) and abrasive glass papers (grain size 180, H 585). The specimens were given a spiral movement over the surface of the sandpaper which ensured continual rubbing over a fresh surface. W was determined by measuring the length of the specimen. The ratio of the W of the standard specimen (40-grade steel with an H of 162) to the W of the specimen yields the value for the wear resistance ϵ . It is established that:

Card 1/2 1) ϵ of specimens possessing an H equal to 186, 240, and 286

Investigation of the Effect of Hardness of the Abrasive on the Wear of Metals SOV/137-57-6-11123

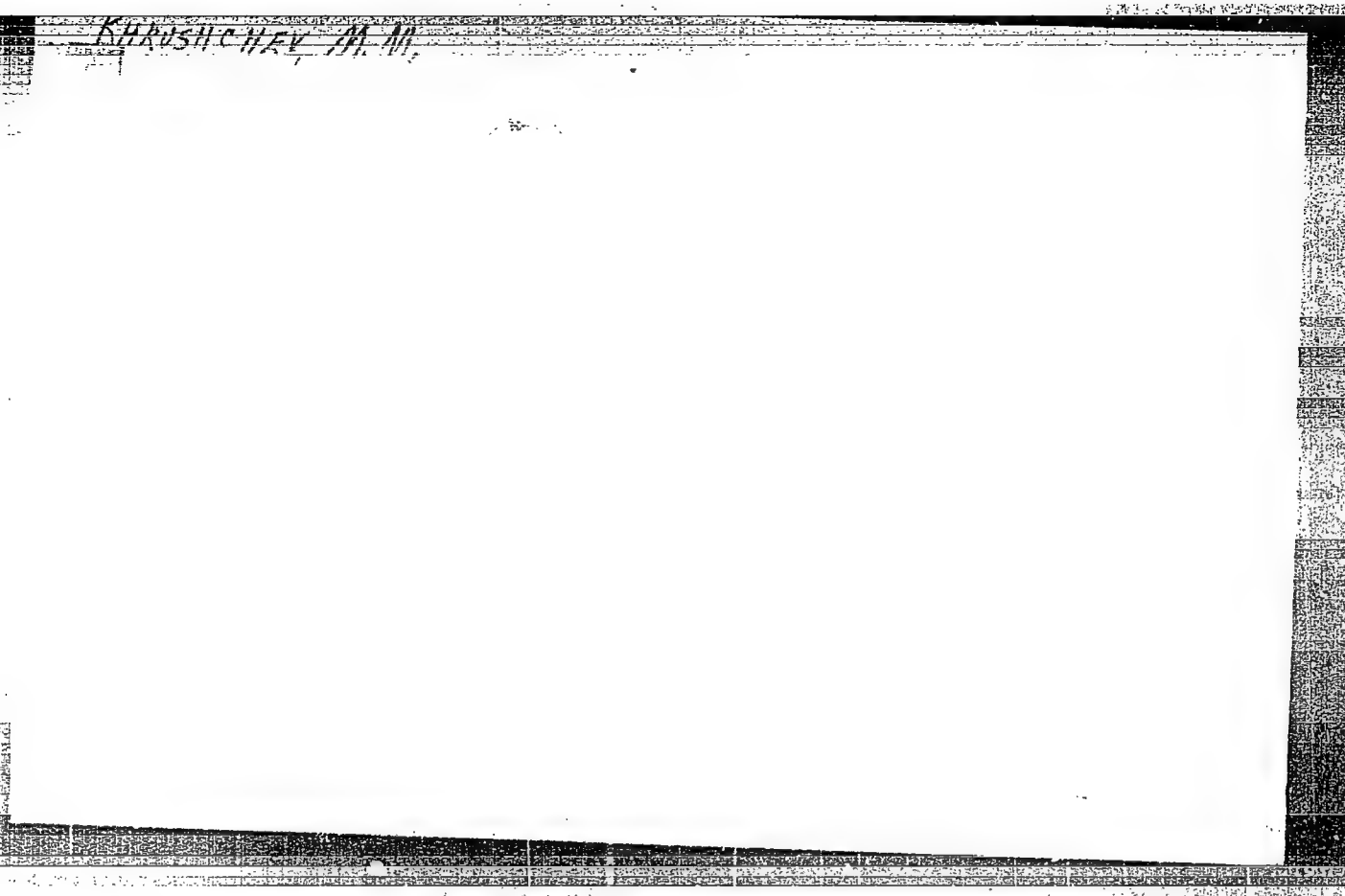
kg/mm² upon rubbing over abrasive glass paper is equal to ϵ of specimens rubbed over corundum sandpaper. Therefore, if H of the abrasive is $> H$ of the steel, then W has no relation to the difference in the hardness of the abrasive and of the steel; 2) ϵ of the specimen having an H of 486 is somewhat higher, i.e., if H of the steel $< H$ of the abrasive, but close to it, then W decreases. Therefore, if H of steel is 615 and 795, ϵ of steel increases greatly, and when H of the metal $> H$ of the abrasive, then W takes place, which fact is explained by the geometrical shape of the grains of the abrasive. In the above case W is dependent upon the difference in the hardness of the metal and of the abrasive and decreases rapidly with its increase.

P.S.

Card 2/2

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RUDNITSKIY, N.M., kand. tekhn. nauk; VEDENYAPIN, G.A., otv.red.; KOZLOVSKIY, I.S.,
kand.tekhn.nauk, red.; ZIL'BERBERG, Ya.G., inzh. zamestitel' otv.red.
BRILING, N.R., doktor tekhn.nauk, prof., red.; KALISH, G.G., doktor
tekhn.nauk, prof., red.; PEVZNER, YA.M., doktor tekhn.nauk, prof.,
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doktor tekhn.nauk, red.; LIPGART, A.A., prof., red.; PRYADILOV, V.I.,
kand. tekhn. nauk, red.; ROZANOV, V.G., kand. tekhn nauk, red.;
CHISTOZVONOV, S.B., inzh., red.; AVAKIMOV, G.G., red.isd-va;
SHIKIN, S.T., tekhn. red.

[Investigating the durability of crankshafts in IAAZ diesel engines]
Issledovanie vyнослиvosti kolenchatykh valov dizelsi IaAZ Moskva,
Gos. nauchn.-tekhn. izd-vo mashinostroitel'noi lit-ry, 1957. 30 p.
(Moscow. Gosudarstvennyi nauchno-issledovatel'skii avtomobil'nyi i
avtomotornyi institut [Trudy], no.8a). (MIRA 11:4)

1. Direktor Gosudarstvennogo soyuznogo ordena Trudovogo Krasnogo
Znameni nauchno-issledovatel'skogo avtomobil'nogo i avtomotornogo
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(Crankshafts and crankshafts) (Diesel engine)

KHRUSHCHEV, M.M.

TRAKTOVENKO, I.A., kand. tekhn. nauk; VEDENYAPIN, G.A., otv. red.; KOZLOVSKIY, I.S., kand. tekhn. nauk, red.; ZIL'BERBERG, Ya.G. inzh. zamestitel' otv. red.; BRILING, M.R., doktor tekhn. nauk, prof., red.; KALISH, G.G., doktor tekhn. nauk, prof., red.; PEVZNER, Ya.M., doktor tekhn. nauk, prof., red.; KHRUSHCHEV, M.M., doktor tekhn. nauk, prof., red.; RAMAYYA, K.S., doktor tekhn. nauk, red.; LIPGART, A.A., prof., red.; PRIYADILOV, V.I., kand. tekhn. nauk, red.; ROZANOV, V.G., kand. tekhn. nauk, red.; CHISTOZVONOV, S.B., inzh., red.; SHIKIN, S.T., tekhn. red.

[Investigating the effect of the cetane number of diesel fuels on the performance of engines] Issledovanie vlianiia tsetanovogo chisla topliva na rabotu dvigatel'ia. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroitel'noi lit-ry, 1957. 30 p. (Moscow. Gosudarstvennyi nauchno-issledovatel'skii avtomobil'nyi i avtomotornyi institut. [Trudy], no.83). (MIRA 10:12)

1. Direktor Gosudarstvennogo soyuznogo ordena Trudovogo Krasnogo Znameni nauchno-issledovatel'skogo avtomobil'nogo i avtomotornogo instituta (for Vedenyapin). 2. Zamestitel' direktora po nauchnoy rabote Gosudarstvennogo soyuznogo ordena Trudovogo Krasnogo Znameni nauchno-issledovatel'skogo avtomobil'nogo i avtomotornogo instituta (for Kozlovskiy). 3. Chlen-korrespondent AN SSSR (for Briling). (Diesel fuel) (Diesel engine)

PHASE I BOOK EXPLOITATION

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Khrushchov, Mikhail Mikhaylovich

Novyye pribory dlya izucheniya iznosa materialov i detaley mashin (New Devices for Studying the Wear of Materials and Machine Parts) Moscow, Izd-vo AN SSSR, 1957. 40 p. 8,000 copies printed. (Series: Akademiya nauk SSSR. Nauchno-populyarnaya seriya)

Ed. of Publishing House: Prokof'yeva, N. B.; Tech. Ed.: Polisitskaya, S. M.

PURPOSE: This booklet is intended for persons interested in the testing of materials and machinery.

COVERAGE: This booklet presents a detailed description of three devices and techniques said to have been newly developed by the Institut mashinovedeniya AN SSSR (Institute of Mechanical Engineering of the USSR Academy of Sciences) for the purpose of studying wear of materials and machine parts. The following equipment is described: 1) the UFOI-6 Device for determining wear of cylinders and piston rings of internal combustion engines by the method of the crescent-shaped recess, i.e., determining depth of wear by calculation from reduced length of recess;

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New Devices for Studying (Cont.)

633

2) the Kh 4-B Machine for determining relative wear resistance of metallic surfaces in abrasive wear; and 3) the KT-2 Machine for determining limits of supporting capacity of oil film in boundary lubrication of metals. No personalities are mentioned. There are 10 references, all Soviet.

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CONTENTS:

Foreword

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UPOI-6 Device for Determining Wear of Internal Combustion Engine Parts
by the Method of Crescent-shaped Recess

4

Kh 4-B Machine for Abrasive Wear Testing

18

KT-2 Machine for Investigation of Friction and Determination of Critical
Temperature of Oil Film in Boundary Lubrication of Metals

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AVAILABLE: Library of Congress (TJ 148.K48)

Card 2/2

G0/eag
9/25/58

KHRUSHCHOV, M. M.

POCHTAREV, Nikolay Fedorovich, kand.tekhn.nauk; KHRUSHCHOV, M.M. doktor tekhn.
nauk, prof., red.; GOLOSHCHAPOV, I.M., red.; MYASHNIKOVA, T.P., tekhn.red.

[Effect of dust on the wear of piston engines] Vliianie zapylennosti
vozdukha na iznos porshnevnykh dvigatelei. Pod red.M.M.Khrushchova.
Moskva, Voen.izd-vo M-va obor.SSSR, 1957. 137 p. (MIRA 10:12)
(Gas and oil engines) (Dust)

KHRUSHCHOV, M.M

PHASE I BOOK EXPLOITATION

225 Rev.

Tomsk. Universitet. Sibirskiy fiziko-tekhnicheskoy institut.

Issledovaniya po fizike tverdogo tela (Research in the Physics of Solids) Moscow, Izd-vo AN SSSR, 1957. 277 p. 4,000 copies printed.

Resp. Ed.: Bol'shanina, M. A., Dr. of Physical and Mathematical Sciences, Prof.;
Ed. of Publishing House: Bankvitser, A. L.; Tech. Ed.: Kashina, P. S.

Approved for printing: Akademiya nauk SSSR. Otdeleniye fizikomatematicheskikh nauk.

PURPOSE: This collection of articles is meant for metallurgical physicists and for engineers of the metalworking industry.

COVERAGE: This book contains results of research in the field of failure and plastic deformation of materials, mainly of metals. The work was conducted along two main lines: 1) study of the physical principles of plasticity, study of the effect of temperature, rate of deformation, character of alloys, etc., on the mechanical properties, and 2) the study of the cutting, wear, and friction characteristics of metals and alloys. This collection is

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Research in the Physics of Solids

225 Rev.

dedicated to Vladimir Dmitriyevich Kuznetsov, Corresponding Member of the Academy of Sciences of the USSR, Professor, Doctor of Physical and Mathematical Sciences. The physicists of the Tomsk State University Siberian Physics-technical Institute (SFTI) and other scientists participated in this work.

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Preface

Vladimir Dmitriyevich Kuznetsov, Corresponding Member of the Academy of Sciences of the USSR (on the Occasion of the 70th Anniversary of his Birthday)

4

Khrushchov, M. M. Certain Problems in Abrasive-Wear Testing Methods

5

Wear-testing investigations were performed by Zaytsev, A. K., Professor Matsin, E. A., Zamotorin, M. I., Professor, Khrushchov, M.M., and Babichev, M. A. Abrasion testers used were the Kh 4 and Kh 4-B. There are 5 figures, 1 table and 17 references, 9 of which are Soviet.

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Card 2/13

~~KHRUSHCHOV, M.M.~~, professor, otvetstvennyy redaktor; BOGOSLOVSKIY, B.B.,
redaktor izdatel'stva; NOVIKOVA, S.G., tekhnicheskii redaktor

[Development of a theory of friction and wear; proceedings of a
conference on problems of a theory of friction and wear (November
15-17, 1954)] Razvitie teorii treniya i iznashivaniya; trudy sove-
shchaniya po voprosam teorii treniya i iznashivaniya (15-17 noyabrya
1954 g.). Moskva, 1957. 227 p.
(MLRA 10:10)

1. Akademiya nauk SSSR. Institut mashinovedeniya
(Mechanical wear) (Friction)

KHRUSHCHOV, M. M.

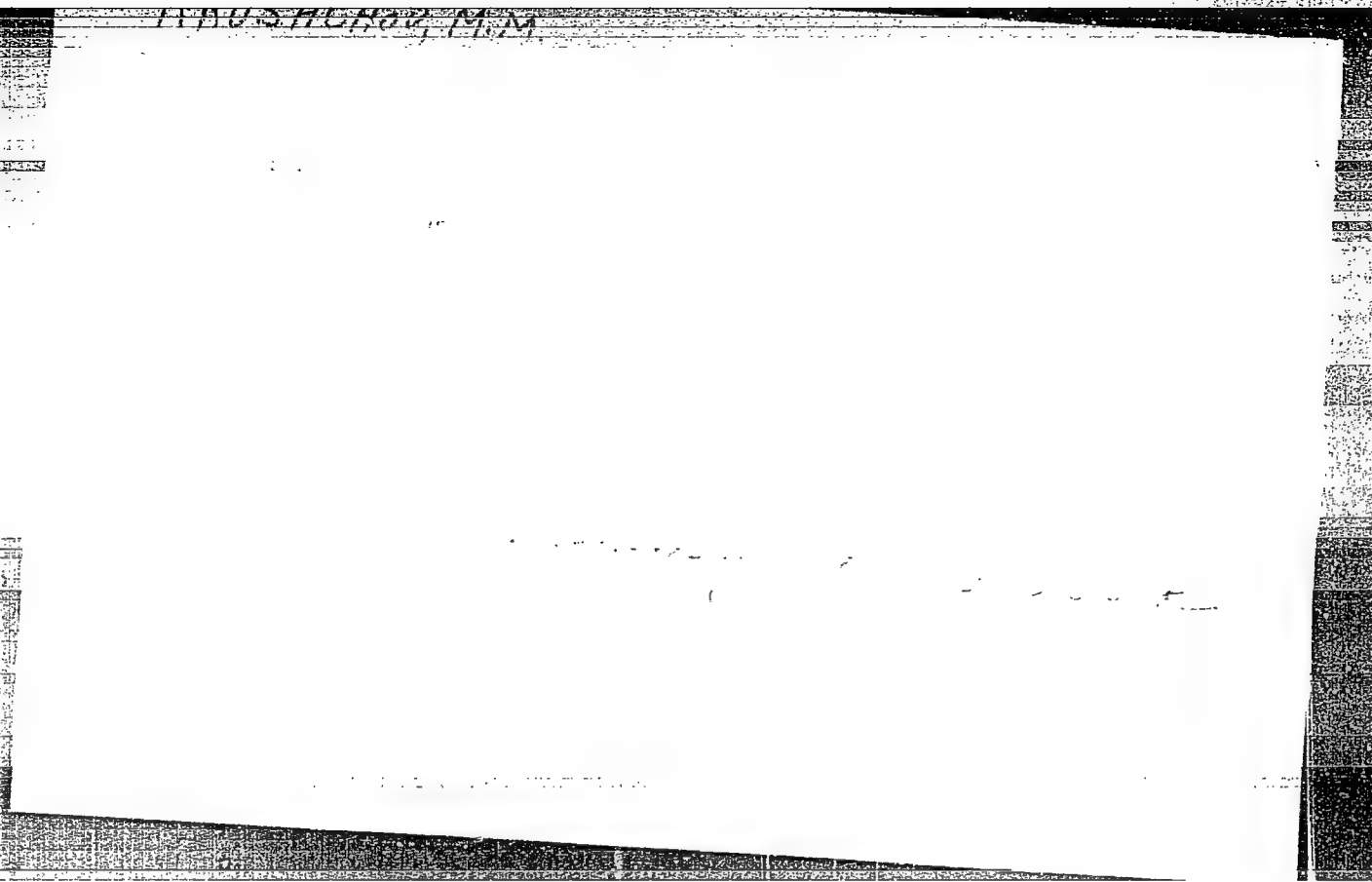
"Resistance of Metals to Wear by Abrasion, as Related to Hardness,"

Inst. of Mechanical Engineering, Acad. Sci. USSR

paper presented at the Conference on Lubrication and Wear held at the Inst.
of Mechanical Engineers, London, 1-3 Oct 57.

"APPROVED FOR RELEASE: 03/13/2001

CIA-RDP86-00513R000722410012-2



APPROVED FOR RELEASE: 03/13/2001

CIA-RDP86-00513R000722410012-2"

Khrushchev, M.M.

AUTHORS: Khrushohov, M.M., Matveyevskiy, R.M., Bogatyrev, I.S. 32-11-42/60

TITLE: A Machine for Examining the Wear (of Samples) in Forward- and Backward Revolution (Mashina dlya ispytaniya na iznashivaniye pri vosvratno-vrashchatel'nom dvizhenii)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 11, pp. 1377-1379 (USSR)

ABSTRACT: The present paper describes a method of examining the wear of a hinge-like construction, for which purpose a special machine is used the constructional scheme of which is described in the paper. The machine was originally constructed by M.M.Khrushchev and later completed by I.S. Bogatyrev; in production it was known as "X6-6". The main principle of the machine consists in the fact that 2 pairs of the parts of a tractor as, e.g. 1 bolt and 1 sleeve are subjected to a hinge-like frictional movement, while carefully strained sand with a quartz content of 98% is conveyed on to the friction surface. The machine consists of 2 systems which are connected with each other; one of them is in a fixed position, the other is pivotable on a one-arm axis and can be weighted by means of exchangeable weights and pressed against the other system by means of a lever. The first pair of samples is telescoped so that the bolt is able to move freely in the sleeve with a sufficient amount of play; it is fastened into the first system of the machine in

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KHRUSHCHOV, M.M.

28(5) P. 2, 3

PHASE I BOOK EXPLOITATION

SOV/2632

Akademiya nauk SSSR. Institut mashinovedeniya

Treniye 1 iznos v mashinakh; sbornik XII (Friction and Wear in Machines; Collection 12) Moscow, Izd-vo AN SSSR, 1958. 354 p. Errata slip inserted. 4,000 copies printed.

Ed.: M.M. Khrushchov, Professor; Ed. of Publishing House: M.A. Babichev; Tech. Ed.: Ye.V. Zelenkova; Editorial Board: Ye.M. Gut'yar, Professor, A.K. D'yachkov, Professor, I.V. Kragel'skiy, Professor, A.D. Kuritsyna, Candidate of Technical Sciences, L.Yu. Pruzhanskiy, Candidate of Technical Sciences, and M.M. Khrushchov, Professor.

PURPOSE: This book is intended for scientists, engineers, and technicians in the field of machine manufacture and operation, and for instructors in schools of higher education (vuzes).

COVERAGE: This collection of articles presents the results of new investigations in the field of wear, friction, and

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Friction and Wear in Machines (Cont.)

SOV/2632

lubrication. The subjects discussed include structural changes in the surface layer of metals in friction, development of friction-brake materials, and theoretical investigations in the field of dry friction and friction with boundary and complete friction. For the abstract of each article see the Table of Contents. A bibliography of Soviet and non-Soviet materials on friction, wear and lubrication for 1954-55 prepared by Ye.O. Vil'dt is included.

TABLE OF CONTENTS:

Preface

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Khrushchov, M.M., and M.A. Babichev. Abrasive Wear Resistance of Structurally Nonhomogeneous Materials
The relationship between wear resistance of structurally nonhomogeneous materials and the number and wear resistance of individual structural elements was investigated.

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SOV/24-58-4-29/39

AUTHORS: Matveyevskiy, R. M. and Khrushchov, M. M. (Moscow)

TITLE: Importance of the Temperature Method of Evaluating the Lubricating Properties of Oils (Znachenie temperatur'nogo metoda otsenki smazochnoy sposobnosti masel)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 4, pp 141-143 (USSR)

ABSTRACT: Reply to the comments of G. V. Vinogradov "On the Temperature Method of Evaluating the Lubrication Properties of Oils". The authors deal individually with the thirteen points raised by Professor G. V. Vinogradov. At the end they summarize their reply thus: Dealing separately with each of the points raised by Professor Vinogradov it can be seen clearly that the doubts raised by him are not justified. The new method was not developed as a competition to the methods based on the 4-ball machine and, therefore, there is no danger that this method will exclude other test variants at relatively high sliding speeds, methods which are known as well as methods which still have to be developed. The purpose of the new method was to

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Importance of the Temperature Method of Evaluating the Lubricating
Properties of Oils

SOV/24-58-4-29/39

fill an important gap in evaluating the anti-friction properties of oils under conditions of boundary friction which could not be carried out by any other method. It is necessary to accumulate data in various laboratories on the critical temperatures and other characteristics of the anti-friction properties of lubricating oils and only after such data are available will it be possible to evaluate the importance and the practical value of the new method. Quite apart from such work it will be necessary to continue work on extending the fields of application of the new method for elucidating certain problems raised by Vinogradov as well as various problems which have not been raised in his remarks.

Card 2/2

KHRUSHCHOV, M. M.

AUTHORS:

SOV/ 30-58-6-33/45
Artobolevskiy, I. I., Member, Academy of Sciences, USSR,
Bessonov, A. P., Candidate of Technical Sciences,
Khrushchov, M. M., Doctor of Technical Sciences,
Pruzhanskiy, L. Yu.

TITLE:

The Development of Machine Science (Razvitiye nauki o mashinakh)

PERIODICAL:

Vestnik Akademii nauk SSSR, 1958, Nr. 6, pp. 118-122
(USSR)

ABSTRACT:

At the Institute of Machine Science of the AS USSR, the second All Union Conference on essential problems of the theory of machines and mechanisms took place from March 24 - 28. The task of this conference was the discussion of concrete results obtained by Soviet and foreign scientists in this field in the course of recent years, as well as to determine the main directions of the further development of this science. Besides Soviet scientists from various towns of the USSR, also scientists of the other peoples' republics took part. More than 80 reports and communications were heard. The first plenary meeting was opened by I. P. Bardin, Member, Academy

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The Development of Machine Science

SOY30-58-6-33/45

of Sciences. In his report A. A. Blagonravov dealt with the importance of machine science for solving the problems in the automatization of production processes. I. I. Artobolevskiy, Member, Academy of Sciences, gave a survey of the present stage of the machine and mechanism theory. N. G. Bruyevich, Member, Academy of Sciences, reported on the main trends in the development of the science of the accuracy in machine- and apparatus-building. V. Likhtenkhe'dt characterized in short the stage of development of the theory of mechanisms in the German Democratic Republic, D. Manzharon reported on the works of Romanian scientists in this field. I. Shreyter (Czechoslovakia), Ya. Oderfel'd (Poland) and G. Kalitsin (Bulgaria) delivered short welcoming addresses. The work of the conference was carried out in 5 sections: analysis and synthesis of mechanisms; machine dynamics; theory of accuracy in machine and apparatus building; theory of automatic machines; theory of machine drives. Reports dealing with the preset control of metalworking machines met with great interest. At the end of the conference it was found that the research carried out is closely connected with the problem of automatization. It was

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The Development of Machine Science

SOV/ 30-58-6-33/45

noticed, too, that not all trends in machine theory show a uniform development. The most important problems for the future were outlined. Urgent problems concerning the method of teaching machine theory as a subject were discussed with the representatives of the Chairs of Universities.

The third All Union Conference on friction and wear in machines was organized by the Institute for Machine Science of the AS USSR in Moscow, and was held from April 9 - 15. It was attended by representatives of the ministries, the councils of national economy, the scientific research institutes, the universities and industrial enterprises of various cities of the USSR, as well as by the foreign scientists F. Dukati and E. Lekhner (Hungary), V. N. Konstantinesku and N. Tipey (Romania) and I. Sgon (Czechoslovakia). The conference was opened by A. A. Blagonravov, Member, Academy of Sciences. Further reports were delivered by:

- 1) Ye. M. Gut'yar on the present trends in the development of the theory on hydrodynamic lubrication.

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The Development of Machine Science

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- 2) G. V. Vinogradov on some new problems in the field of lubrication and lubricating materials.
- 3) B. V. Deryagin on modern lubrication problems.
- 4) I. V. Kragel'skiy on the development of the sciences of dry friction.
- 5) M. M. Khrushchov on modern trends in the development of the science of wear and resistance to wear.

The work of the conference took place in 5 sections: hydrodynamic theory on lubrication and sliding surfaces; lubrication and lubricating materials; dry friction and limit friction; wear and resistance to wear; friction and antifriction materials. The conference expressed the wish that a national committee on friction and wear in machines be formed. The necessity of working out a terminology in the field of friction and wear was stressed. At the Universities for Machine Building a course of lectures on friction, wear and lubrication of machines is to be introduced. It was also suggested to establish branches of the seminary, of the Institute of Machine Science dealing with this field

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The Development of Machine Science

SOV/30-58-6-33/45

at other centers.

ASSOCIATION: Institut mashinovedeniya
(Institute of Machine Engineering)

1. Machines--Theory
2. Machines--Design

Card 5/5

KHRUSHCHOV, M.M., doktor tekhn.nauk, red.; NIKITIN, A.G., inzh., red.;
ML'KIND, V.D., tekhn.red.

[Increasing the durability of machine parts (sulfidization);
a collection of articles] Povyshenie stoikosti detalei mashin
(sul'fidirovanie); sbornik statei. Pod red. M.M.Khrushchova.
Moskva, 1959. 126 p. (MIRA 12:5)

1. Akademiya nauk SSSR. Institut mashinovedeniya.
(Annealing of metals)

GENKIN, Mikhail Dmitriyevich; KUZ'MIN, Nikolay Fedotovitch; MISHARIN, Yuriy Aleksandrovich; KHRUSHCHOV, M.M., prof., doktor tekhn.nauk, retsenzent; GAVRILENKO, V.A., prof., doktor tekhn.nauk, retsenzent; SHEDROV, V.S., prof., doktor tekhn.nauk, retsenzent; PINEGIN, S.V., prof., doktor tekhn.nauk, otv.red.; KLEBANOV, M.Ya., red.izd-va; KASHINA, P.S., tekhn.red.

[Seizing of gear wheels] Voprosy zaedaniia subchatykh koles. Moskva, Izd-vo Akad.nauk SSSR, 1959. 146 p. (MIRA 12:12)
(Gearing) (Mechanical wear)

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PHASE I BOOK EXPLOITATION

SOV/2158

Khrushchov, Mikhail Mikhaylovich, and Yefim Solomonovich Berkovich

Opredeleniye iznosa detaley mashin metodom iskusstvennykh baz (Determining Wear of Machine Parts by the Indentation Method) Moscow, 1959. 217 p.
Errata slip inserted. 2,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya.

Resp. Ed.: A.A. Blagonravov, Academician; Ed. of Publishing House: V.S. Rzhiznikov; Tech. Ed.: T.P. Polenova.

PURPOSE: This book is intended to acquaint scientific research workers, designers, and process engineers with advanced methods of measuring the wear of machine parts.

COVERAGE: This book deals with a system of determining the wear of machine parts supposedly developed by the authors. This system is known in the United States as the indentation method. Other existing methods are also briefly described. According to the authors, the most accurate method in the indentation system is the method of cutout recesses developed by them in 1947. The majority of instruments described in this book relate to this method. These instruments

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KOROVCHINSKIY, Mikhail Viktorovich; ~~KHRUSHCHOV, M.M.~~, prof., doktor
tekhn.nauk, retsenzent; GOLUBEV, A.I., kand.tekhn.nauk, red.;
TAIROVA, A.L., red.izd-va; SOKOLOVA, T.F., tekhn.red.

[Theoretical basis of sliding bearing performance] Teoreticheskie osnovy raboty podshipnikov skol'zheniya. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 402 p.

(Bearings (Machinery))

(MIRA 12:12)

28(5)

AUTHORS:

Khrushchov, M. M., Babichev, M. A., Chalaganidze, Sh. I. SOV/32-25-7-33/50

TITLE:

New Method of Determining the Abrasion Resistance of Galvanically Deposited Metals (Novyy metod otsenki iznosostoykosti galvanicheskikh osazhennykh metallov)

PERIODICAL:

Zavodskaya laboratoriya, 1959, Vol 25, Nr 7, pp 872-875 (USSR)

ABSTRACT:

A material similar to carbonaceous steel (Ref 1) which can be used for repairing abraded machine elements can be obtained by electrolytic deposition of iron. In this connection the properties of these deposits obtained from various electrolyte baths and by various working techniques have to be systematically investigated. The abrasion method on the machine Kh4-B (designed at the Institut mashinovedeniya AN SSSR (Institute of Machine Construction of the AS USSR)) (Ref 2) is most favorable for determining the abrasion resistance (AR) of galvanic deposits. The application of this method by means of the machine Kh4-B (Fig 1, Diagram) for the determination of the (AR) of iron deposits from 3 different baths is described. Tempered steel 9KhS and the lead-tin alloy BM were used as standard. Sh. I. Chalaganidze deposited iron from the following

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New Method of Determining the Abrasion Resistance of Galvanically Deposited Metals

SOV/32-25-7-33/50

three baths: bath Nr 1 with iron containing hydrofluoboric acid, and with boric acid and hydrofluoric acid; bath Nr 2 with iron sulfate and aluminum sulfate; bath Nr 3 with iron phenol sulfonate and phenolsulfonic acid. The temperature of the baths was 40°, current density 5 and 8 a/dm², thickness of the deposits obtained 0.45-0.47, 0.30 and 0.45 mm. The deposition took place on foils of steel 45. Before the abrasion test the surface hardness of the deposits was tested on the machine PMT-2. The testing results obtained showed that the greatest (AR) was not observed with the greatest hardness. The hardness of the deposits obtained from bath Nr 1 is increased by the tempering the deposit, whereas the increased hardness of the deposits from bath Nr 2 is caused by an alloy of iron with hydrogen. Various explanations are given by a diagram "relative (AR) - hardness" of types of steel treated in different ways. There are 3 figures and 4 Soviet references.

ASSOCIATION:
Card 2/2

Institut mashinovedeniya Akademii nauk SSSR i Gruzinskiy institut mekhanizatsii i elektrifikatsii sel'skogo khozyaystva

PHASE I BOOK EXPLOITATION

SOV/4492

Khrushchov, Mikhail Mikhaylovich, and Yefim Solomonovich Berkovich

Izucheniye tverdosti l'da (Investigation of the Hardness of Ice) Moscow, Izd-vo AN SSSR, 1960. 48 p. Errata slip inserted. 2,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya.

Resp. Ed.: M.G. Lozinskiy, Doctor of Technical Sciences; Tech. Ed.: I.F. Koval'skaya.

PURPOSE: This book is intended for scientific and engineering personnel concerned with problems associated with building under ice, frozen soil, and low temperature conditions.

COVERAGE: The book presents systematized data on ice hardness obtained by Soviet and other scientists by means of different experimental methods. In 1958 the authors of this book made the first study of ice hardness at various temperatures by the indentation method, using a microhardness testing instrument. The Institut mashinovedeniya (Institute of the Science of Machines) of the Academy of Sciences USSR, has been engaged in studies of ice friction and ice hardness at low temperatures, and the effect of such conditions on winter transport

Card 1/3

KHRUSHCHOV, M.M., prof., doktor tekhn.nauk, red.; TSOPIN, K.G., inzh.,
red.izd-va; EL'KIND, V.D., tekhn.red.

[Increasing the wear resistance of the working parts of tillage
machinery] Povyshenie dolgovechnosti raboobikh detalei pochvo-
obrabatyvaiushchikh mashin. Pod obshchei red. M.M.Khrushchova.
Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960.
198 p. (MIRA 13:9)

1. Akademiya nauk SSSR. Institut mashinovedeniya.
(Flows)

KHRUSHCHOV, M.M.

PHASE I BOOK EXPLOITATION

SOV/5053

Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh. 3d, 1958.

Iznos i iznosostoykost'. Antifriktsionnyye materialy (Wear and Wear Resistance. Antifriction Materials) Moscow, Izd-vo AN SSSR, 1960. 273 p. Errata slip inserted. 3,500 copies printed. (Series: Its: Trudy, v. 1)

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Resp. Ed.: M. M. Khrushchov, Professor; Eds. of Publishing House: M. Ya. Klebanov, and S. L. Orpik; Tech. Ed.: T. V. Polyakova.

PURPOSE: This collection of articles is intended for practicing engineers and research scientists.

COVERAGE: The collection, published by the Institut mashinovedeniya, AN SSSR (Institute of Science of Machines, Academy of Sciences USSR) contains papers presented at the III Vsesoyuznaya Konferentsiya po treniyu i iznosu v mashinakh (Third All-Union

Card ~~1713~~

Wear and Wear Resistance (Cont.)

SOV/5053

Conference on Friction and Wear in Machines) which was held April 9-15, 1958. Problems discussed were in 5 main areas: 1) Hydrodynamic Theory of Lubrication and Friction Bearings (Chairmen: Ye. M. Gut'yar, Doctor of Technical Sciences, and A. K. D'yachkov, Doctor of Technical Sciences); 2) Lubrication and Lubricant Materials (Chairman: G. V. Vinogradov, Doctor of Chemical Sciences); 3) Dry and Boundary Friction (Chairmen: B. V. Deryagin, Corresponding Member of the Academy of Sciences USSR, and I. V. Kragel'skiy, Doctor of Technical Sciences); 4) Wear and Wear Resistance (Chairman: M. M. Krushchov, Doctor of Technical Sciences); and 5) Friction and Antifriction Materials (Chairmen: I. V. Kragel'skiy, Doctor of Technical Sciences, and M. M. Krushchov, Doctor of Technical Sciences). Chairman of the general assembly (on the first and last day of the conference) was Academician A. A. Blagonravov. L. Yu. Pruzhanskiy, Candidate of Technical Sciences, was scientific secretary. The transactions of the conference were published in 3 volumes, of which the present volume is the first. This volume contains articles concerning the wear and

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Wear and Wear Resistance (Cont.)

SOV/5053

wear resistance of antifriction materials. Among the topics covered are: modern developments in the theory and experimental science of wear resistance of materials, specific data on the wear resistance of various combinations of materials, methods for increasing the wear resistance of certain materials, the effects of friction and wear on the structure of materials, the mechanism of the seizing of metals, the effect of various types of lubricating materials on seizing, abrasive wear of a wide variety of materials and components under many different conditions, modern developments in antifriction materials, and the effects of finish machining on wear resistance. Many personalities are mentioned in the text. References accompany most of the articles.

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PHASE I BOOK EXPLOITATION

SOV/4520

Khrushchov, Mikhail Mikhaylovich, and Mikhail Alekseyevich Babichev

Issledovaniya iznashivaniya metallov (Metal Wear Investigations) Moscow, Izd-vo AN SSSR, 1960. 350 p. Errata slip inserted. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya.

Resp. Ed.: A.A. Blagonravov, Academician; Ed. of Publishing House: P.N. Belyanin;
Tech. Ed.: Ye.V. Makuni.

PURPOSE: This book is intended for scientific research workers, mechanical engineers, and metallurgists.

COVERAGE: The book contains results of theoretical and experimental investigations on the abrasive wear of metals, materials and minerals. Methods used for testing (under various conditions) the abrasive wear resistance of steels, iron, alloys and other metallic materials are reviewed. The authors describe the testing procedure and the machines employed in the testing. The effect of abrasive hardness and grain size on the wear of metals is analyzed and theoretical problems of abrasive wear are discussed. The authors thank Academician A.A. Blagonravov, Director of the Institut mashinovedeniya AN SSSR (Institute of Science of Machines,
Card 1/11

S/711/60/014/000/011/013
D232/D301

AUTHORS: Kragel'skiy, I.V., and Krushchov, M.M.
TITLE: In memory of Yelena Mikhaylovna Shvetsova (On the
5th anniversary of her death)
SOURCE: Akademiya nauk SSSR. Institut mashinovedeniya. Treniye
i iznos v mashinakh, v. 14, 1960, 284 - 286

TEXT: Ye.M. Shvetsova, Candidate of Technical Sciences and Senior Scientific Co-worker of the Friction Laboratory of the Institut mashinovedeniya AN SSSR (Institute of Machine Sciences of the AS USSR), was born in 1906 and died on June 30, 1953. Graduating as a mechanical engineer in 1930, she took up work the following year at the Avtotraktornyy institut (Institute of Motor Vehicles and Tractors) and, in 1948 at the Institute of Machine Science. Shvetsova specialized in the study of friction and wear in machines and in the mechanical testing of materials. She contributed to the standardization of impact testing of steels and worked on classifying the various types of damage caused by friction. A bibliography containing 14 works published by Shvetsova between 1933 and 1955 is given. ✓
Card 1/1

S/711/60/014/000/012/013
D232/D301

AUTHOR: Khrushchov, M.M.
TITLE: In memory of Vladimir Fedorovich Lorents
SOURCE: Akademiya nauk SSSR. Institut mashinovedeniya. Treniye
i iznos v mashinakh, v. 14, 1960, 287 - 288

TEXT: Candidate of Technical Sciences V.F. Lorents was born in 1890 and died on March 22, 1957. After graduating as a mechanical engineer at MVTU in 1917, he worked in industry until he took up teaching appointments at: Moskovskiy institut inzhenerov zh.-d. transporta (Moscow Institute of Engineers of Railroad Transportation) in 1925, the Moskovskiy elektromekhanicheskiy institut inzhenerov zh.-d. transporta (Moscow Electromechanical Institute of Engineers of Railroad Transportation) in 1931 and Vsesoyuznyy zaochnyy institut inzhenerov zh.-d. transporta (All-Union Correspondence Institute of Engineers of Railroad Transportation) in 1953. Apart from his teaching work, Lorents carried out research on the mechanical properties of materials used in the railroads and, later, in

Card 1/2

S/711/60/014/000/013/013
D232/D301

AUTHORS: Garkunov, D.N., Slobodyannikov, S.S., and Khrushchov, M.M.

TITLE: In memory of Leonid Vladimirovich Yelin

SOURCE: Akademiya nauk SSSR. Institut mashinovedeniya. Treniye i iznos v mashinakh, v. 14, 1960, 290 - 291

TEXT: Yelin died in Odessa in 1957 at the age of 47. He graduated in Marine Mechanical Engineering in 1936 at the Odesskiy institut inzhenerov morskogo flota (Odessa Institute of Maritime Fleet Engineers) and obtained a Degree of Candidate of Technical Sciences in 1938. He subsequently took up a teaching appointment at the Department of Metal Technology at the above Institute. Whilst his activities were mainly pedagogical, he also carried out research on the friction and wear in machine components. His doctorate was obtained at the Institut mashinovedeniya Akademii nauk SSSR (Institute of Machine Sciences of the Academy of Sciences USSR). He put forward a new explanation for the possible causes of wear of metals in contact, having inhomogeneous mechanical properties, and without des-
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In memory of Leonid Vladimirovich Yelin S/711/60/014/000/013/013
D232/D301

stroying the layers of oil which separate the bodies in contact. Together with Professor V.A. Anichkov, Yelin developed the AE-5 machine for testing metal specimens for friction.

Card 2/2

KHRUSHCHOV, M.M.; BABICHEV, M.A.

Analysis of the method of testing for microhardness by scratching according to Bierbaum. Zav.lab. 26 no.1:82-87 '60.
(MIRA 13:5)

1. Institut mashinovedeniya Akademii nauk SSSR.
(Metals--Testing) (Hardness)

S/020/60/131/06/25/071
B014/B007

AUTHORS: Khrushchov, M. M., Babichev, M. A.

TITLE: The Resistance to Abrasive Wear²⁶ and the Modulus of Elasticity of Metals and Alloys

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 131, No. 6, pp. 1319 - 1322

TEXT: By way of introduction the authors refer to several of their own papers (Refs. 1-4), in which the relative resistance to wear of various technically pure metals was investigated. This relative resistance to wear ϵ was determined on standards of a lead-tin alloy, and was found to be proportional to Vickers hardness H_V . The relation $\epsilon = 0.137H_V$ is given. For silicon and germanium the relation $\epsilon = 0.012H_V$ was found, which holds also for a number of other minerals.

According to the opinion of B. M. Rovinskiy (Ref. 5) the properties of the metals are functions of lattice stiffness. Analyses showed the dependence of the relative resistance to wear on the square of the modulus of elasticity. From previously published experimental results obtained by the authors, the diagram shown in Fig. 1 was constructed, in which the relative resistance to wear is graphically

Card 1/3

The Resistance to Abrasive Wear and the Modulus of Elasticity of Metals and Alloys

S/020/60/131/06/25/071
B014/B007

represented as dependent on the logarithm of the modulus of elasticity. Herefrom the approximation $\varepsilon = 0.49 \cdot 10^{-4} E^{1.3}$ was obtained. In Fig. 2 the dependences of Vickers hardness of the relative resistance to wear and of the modulus of elasticity upon the composition of the system Cu-Ni, and in Fig. 3 on the composition of the system Pb-Sn are graphically represented. In the first system the modulus of elasticity and the relative resistance to wear increase linearly with increasing nickel content, whereas Vickers hardness has a maximum with 55% nickel. Fig. 3 shows that the hardness of the system Pb-Sn increases quickly from 0 to a few % of Sn, and that this increase is lower in the case of a higher Sn content. The modulus of elasticity and the relative resistance to wear do not increase linearly with an increasing Sn-content. In the case of the results obtained, not only measured values obtained by the authors, but also such obtained by other scientists were used. The influence exerted by chemical compounds, the lattice structure, and the microstructure upon the determined quantities is shown, and the importance of the results obtained for the theory of wearability and for the research for new wear-resistant materials are pointed out. There are 3 figures and 12 references, 8 of which are Soviet.

Card 2/3

The Resistance to Abrasive Wear and the Modulus of
Elasticity of Metals and Alloys

S/020/60/131/06/25/071
B014/B007

ASSOCIATION: Institut mashinovedeniya Akademii nauk SSSR (Institute of Machine
Construction of the Academy of Sciences, USSR)

PRESENTED: December 18, 1959, by A. A. Blagonravov, Academician

SUBMITTED: December 1, 1959



Card 3/3

KHRUSHCHOV, M.M., otv. red.; SIDORENKO, A.T., red.izd-va

[Plastics as antifriction materials] Plastmassy kak antifriktsion-
nye materialy. Moskva, Izd-vo Akad. nauk SSSR, 1961. 116 p.
(MIRA 14:11)

1. Akademiya nauk SSSR. Institut mashinovedeniya.
(Plastics)

NESVIZHSKIY, Oskar Abramovich, kand.tekhn.nauk; KHRUSHCHOV, M.M., prof.,
doktor tekhn.nauk, retsenzent; CHERNYAK, O.V., inzh., red.;
DOBRITSYNA, R.I., tekhn.red.

[Manufacture of balls for ball mills] Proizvodstvo meliushchikh
tel dlia sharovykh mel'nits. Moskva, Gos.nauchno-tekhn.izd-vo
mashinostroit.lit-ry, 1961. 151 p. (MIRA 14:6)
(Crushing machinery)

KHRUSHCHOV, M.M., doktor tekhn. nauk, prof., otv. red.; VINOGRADOV, Yu.M., red.; KUGEL', R.V., red.; MATVEYEVSKIY, R.M., red.; PRUZHANSKIY, L.Yu., red.; ORPIK, S.L., red.; POLYAKOVA, T.V., tekhn. red.

[Methods for wear testing] Metody ispytaniya na iznashivanie; trudy. Moskva, Izd-vo Akad.nauk SSSR, 1962. 237 p.

(MIRA 15:12)

1. Soveshchaniye po metodam ispytaniya na iznashivaniye, Moscow, 1960.

(Testing machines) (Radioisotopes--Technological innovations)

KOZYREV, S.P. (Moskva.); KHRUSHCHOV, M.M. (Moskva)

Combined cavitation and abrasive wear of metals. Izv. AN SSSR. Otd.
tekhn. nauk. Mekh. i mashinostr., no. 6: 78-82 N-D '62. (MIRA 15:12)
(Mechanical wear)

S/883/62/000/000/003/020
E194/E155

AUTHOR: Khrushchov, M.M.

TITLE: Standardisation of an abrasive wear test method

SOURCE: Metody ispytaniya na iznashivaniye; trudy soveshchan'ya sostoyavshegosya 7-10 dek. 1960. Ed. by M.N. Khrushchov. Moscow, Izd-vo AN SSSR, 1962. 40-47

TEXT: A description is given of the laboratory abrasive wear test machine type X4-B (KhCh-B). The test piece is a cylinder 2 mm diameter and 10-15 mm long, whose end rubs against the flat surface of a disc of abrasive cloth rotating at 60 r.p.m. At each rotation the specimen is displaced radially by 1 mm, so that half of the specimen rubs against fresh abrasive. At this disc speed the same results are obtained near the periphery of the disc as near its centre, showing that the results are not being influenced by heating. The abrasive disc surface is divided into zones of equal spiral track length, say 3 m; the test specimen is applied to every other zone and a reference material specimen to the intermediate ones. In this way each metal and standard are tested with a load of 0.3 kg for a friction path of 15 m. The test result is Card 1/3

Standardisation of an abrasive ... S/883/62/000/000/003/020
E194/E155

expressed as ratio of wear of standard to wear of test part, and is termed the relative wear resistance. Tests are made at room temperature, with sufficient loading to ensure adequate wear; the abrasive particles are appreciably harder than the metal being tested. The method of comparing against a standard overcomes differences between abrasive discs. There are, of course, limitations in respect of abrasive grain size and in choice of reference metal. The method excludes the effects of changes in sliding speed, heating of the metal, surrounding medium, and certain others, so that the relative wear resistance as here defined is a characteristic property of the material. The machine was described in 1960, and a great many tests have been made with it: a few examples are cited. Curves of wear resistance as function of hardness or wear resistance and hardness as functions of composition, are given for various materials. For particular grades of steel there is a linear relationship between the hardness and wear resistance. However, the two do not always go together; for example in Pb-Sn and Cu-Ni alloys they do not. This laboratory test method does not replace other types of wear test which reproduce service conditions of the finished part. The two kinds of test procedure

Card 2/3

34326

S/032/62/028/003/014/017
B104/B102

17.8200

AUTHOR: Khrushchov, M. M.

TITLE: Correspondence of resistance to wear caused by abrasive chafing with the strength properties of metals

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 3, 1962, 351-356

TEXT: A cylinder, 2 mm thick and 10-15 mm long, is worked in a X4-5 (Kh4-B) machine, with one end bearing on the plane surface of a disk covered with emery paper rotating at 60 rpm. In the course of one revolution by the disk, the test piece undergoes a radial displacement of 1 mm so that 50% of it is always exposed to new abrasive. By comparing the wear of a standard with that of the test piece under a load of 0.5 kg, the relative resistance to wear was determined after a path of friction of 15 m. The relative resistance to wear proves to be indicative of the strength properties of the materials (Fig. 2). The essential features of the method described are: (a) The wearing process arises from a large number of micro sections by the individual grains of the abrasive. The results are, therefore, less dependent upon random

Card 1/6 3

Correspondence of resistance to ...

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defects of the material than they are in tensile tests, for example. (b) The grains of the abrasive have a negative cutting angle. The plastic properties of brittle materials are noticeable under such conditions. The relative resistance to wear characterizes the mechanical properties of not only metals but also of other solids. There are 5 figures and 1 Soviet reference.

ASSOCIATION: Institut mashinovedeniya (Institute of the Science of Machines)

Fig. 2. Relative resistance to wear (ϵ) as a function of hardness. Legend: (1) and (2) A5 (A5) and A7 (A7) aluminum bronzes cold hardened after heat treatment; (3) B2 (B2) beryllium bronze cold hardened after tempering; (4) 20X18H9 (20Kh18N9) steel cold hardened after tempering; (5) St.45 (St.45) after tempering and drawing before cold hardening; (6) St.45 with various degrees of cold hardening after annealing; (7) - (10) St.45 with various degrees of cold hardening after tempering and drawing at 600, 450, 300, and 150°C.

Fig. 5. Comparison of tensile strength, S_k , and ultimate strength, σ_B .

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Correspondence of resistance to ...

S/032/62/028/003/014/017
B104/B102

for various materials. Legend: (Fe), (Cr.12 (St.12)), (Cr-v) annealed;
(Al), (Cu) and (Cr.20 (St.20)) cold hardened after annealing; (Y4(U4))
steel with 0.45% C after tempering and drawing at various temperatures.

Card 3/3 3

КРШЧОВ, М. М. и БЕРКОВИЧ, Е. С.

S/032/62/028/003/016/017
B104/B102

AUTHORS: Krushchov, M. M., and Berkovich, Ye. S.

TITLE: Instrument for determining the microhardness of large
cylindrical parts similar to rollers

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 3, 1962, 360-362

TEXT: An instrument which can be used for microhardness tests on large rollers was constructed on the basis of the ПМТ-3 (PMT-3) microscope with all due regard to the ГОСТ 9450-60 (GOST 9450-60). The only features of the PMT-3 used were the microscope with the hardness testing equipment, and the vertical carriage which permits a vertical shift of the whole microscope toward and away from the object. This carriage is mounted at right angles to a stage by means of a flange, thus ensuring that the whole arrangement is firmly attached to the roller. There is a sufficiently large opening in the center of the stage to accommodate the shifting mechanism of the microscope. The PMT-3 microscope has a load range of 5-200 g. This proved too small for testing rollers and was extended to 500 g. During testing, the apparatus is pressed down firmly
Card 1/2

Instrument for determining the ...

S/032/62/028/003/016/017
B104/B102

on the freely mounted rollers by weights fixed to the stage by means of rods. To ensure better adherence between roller and stage, the shape of the underside of the latter is adapted to the roller. Operation of the instrument is the same as that of PMT-3. Since indentations produced by the diamond pyramids are small under a load of 500 g, the apparatus has proved useful in a Moscow plant of nonferrous metal foils. N. M. Yemel'yanov, chief mechanic, has tested the apparatus in practice. There are 3 figures. ✓

ASSOCIATION: Institut mashinovedeniya (Institute of the Science of Machines)

Card 2/2

SEMENOV, A.P.; MATVEYEVSKIY, R.M.; POZDNYAKOV, V.V.; KHRUSHCHOV,
M.M., prof., doktor tekhn. nauk, otv. red.; LETNEV, B.Ya.,
red.izd-va; MATYUKHINA, L.I., tekhn. red.

[Production technology and properties of fluoroplast-
containing antifriction materials; basic principles of
their manufacture] Tekhnologiya izgotovleniya i svoystva
soderzhashchikh ftoroplast antifriktsionnykh materialov;
osnovnye printsipy proizvodstva. Moskva, Izd-vo AN SSSR,
1963. 62 p. (MIRA 16:10)

(Friction materials) (Plastics)

KHRUSHCHOV, M.M.; BABICHEV, M.A.

Conformity between the abrasive wear resistance of metals,
alloys and certain minerals and their elastic modulus. Tren.
i izn. v mash. no.17:5-12 '62.

Abrasive wear resistance and elastic modulus of heat-treated
steels. Ibid.:13-22 (MIRA 17:10)

KHRUSHCHOV, M.M., zasluzhennyi deyatel' nauki i tekhniki, doktor tekhn.
nauk, prof.; SEMENOV, A.P., kand.tekhn.nauk

Organization of a specialized production of sliding bearings
is a means for increasing the reliability and durability of
machinery. Vest.mashinostr. 43 no.1:7-9 Ja '63. (MIRA 16:2)

(Bearing industry)

KHRUSHCHOV, M.M.; SEMENOV, A.P.; MATVEYEVSKIY, R.M.; LAZOVSKAYA, O.V.;
BELOUSOV, N.N.; KOLESNIKOVA, V.S.

Investigating lubricated and nonlubricated friction of anti-
friction bronzes and brasses. Tren. i izn. v mash. no.17:36-
70 '62. (MIRA 17:10)

MITROVICH, Vadim Petrovich; KHRUSHCHOV, M.M., doktor tekhn. nauk,
prof., otv. red.; KUDRYAVTSEVA, L.V., red.izd-va;
MATYUKHINA, L.V., tekhn. red.

[Study of friction between polyamides and steel] Issledova-
nie treniia poliamidov po stali. Moskva, Izd-vo AN SSSR,
1963. 94 p. (MIRA 16:11)
(Polyamides) (Steel) (Friction)

KHRUSHCHOV, M. M.; BABICHEV, M. A.

"Resistance to abrasive wear and physical properties of materials."

report submitted to Intl Lubrication Conf, Washington, D.C., 13-16 Oct 64.

KHRUSHCHOV, M. M.; BABICHEV, M. A.

"Resistance to abrasive wear and physical properties of materials."

report presented at the Intl Lubrication Conf, Washington, D.C., 13-16 Oct 64.

Inst for Study of Machines, Lab of Wear Resistance, Moscow.

ACCESSION NR: AT5010236

UR/2711/64/000/019/0003/0016

AUTHOR: Khrushchov, M. M. (Doctor of technical sciences, Professor); Babichev, H. (Doctor of technical sciences)

TITLE: Effect of heat treatment and mechanical working of certain alloy steels on their resistance to abrasive wear

SOURCE: AN SSSR, Institut mashinovedeniya. Treniye i iznos v mashinakh, no. 19, 1964, Treniye metallov i plastmass (Wear and friction of metals and plastics), 3-16

TOPIC TAGS: alloy steel, steel heat treatment, work hardening, steel wear resistance, chromium steel, steel hardness, molten lead quenching

ABSTRACT: A comparison of various methods for increasing the strength of steel is made on the basis of previously published data, that the highest relative wear resistance for a given hardness is produced by alloy steel followed by quenching and then by work hardening. In the present study, low alloy and high alloy steels 7Kh and Kh12F1, quenched in molten lead and then hardened at various temperatures, were studied to determine their wear resistance. The results of these properties with those of the same steel in the initial state are compared.

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ACCESSION NR: AT5010236

It was found that the same values of abrasive wear resistance, for a considerably lower hardness, can be obtained with such hot baths (molten lead) as are obtained by ordinary hardening. The advantage of such treatment is that it gives rise to a higher plasticity and impact toughness for the same wear resistance. The effect of hardening on the abrasive wear resistance of these steels was also investigated. Finally, a method for the quantitative determination of the work hardening as a result of cold-chamber hardening is described. The results are expressed in a table and in a graph. The method for the determination of the work hardening is described in the third section of the report. The results are expressed in a table and in a graph.

ASSOCIATION: none

SUBMITTED: 00 -----

ENCL: 00

SUB CODE: MM

SEARCHED: 004

OTHER: 000

Card 2/2 *ce*

KHRUSHCHOV, M.M., zasluzhennyy deyatel' nauki i tekhniki, doktor tekhn.
nauk, prof.; BABICHEV, M.A., kand. tekhn. nauk

Experimental fundamentals of the theory of abrasive wear. Vest.
mashinostr. 44 no.6:56-62 Je '64. (MIRA 17:8)

KHRUSHCHOV, M.M., doktor tekhn. nauk, prof., otv. red.; YELIZAVETIN,
M.A., kand. tekhn. nauk, red.

[Determining the wear of machine parts in short operating
periods] Opreделение iznosa detalei mashin za korotkie pe-
riody raboty. Moskva, Mashinostroenie, 1965. 73 p.
(MIRA 18:4)

KHRUSHCHEV, M.M., prof., doktor tekhn. nauk, otv. red.; VASIL'YEV,
B.K., red.

[Plastics in sliding bearings; investigations and experience
in their use] Plastmassy v podshipnikakh skol'zheniya; issledo-
vaniya, opyt primeneniya. Moskva, Nauka, 1965. 183 p.

(MIRA 18:9)

1. Moscow. Gosudarstvennyy nauchno-issledovatel'skiy institut
mashinovedeniya.

KHNUSCHOV, M.M. (Moskva); BABICHEV, M.A. (Moskva); CHEHAO-YUAN' [Cheao-Yuan]
(Moskva)

Using sand entrained by a rubber disk in testing steels for
abrasive wear. Mashinovedenie no.1:110-118 '65.

(MIRA 18:5)

KHRUSHCHOV, M.M., doktor tekhn. nauk, otv. red.; BERKOVICH,
Ie.S., kand. tekhn. nauk, red.; GLAZOV, V.M., kand.
tekhn. nauk, red.; GRIGOROVICH, V.K., kand. tekhn.
nauk, red.; SARKISYAN, D.A., kand. tekhn. nauk, red.

[Methods of testing for microhardness. Testing equipment]
Metody ispytaniia na mikrotverdost'. Pribory. Moskva,
Nauka, 1965. 262 p. (MIRA 18:8)

1. Soveshchaniye po mikrotverdosti. 2d, 1963.

L 00853-66 EMT(d)/EMT(m)/EMP(w)/EPF(c)/EMA(d)/T/EMP(t)/EMP(t)/EMA(c) EM/JD/DJ

ACCESSION NR: AP5020705

UR/0129/65/000/008/0017/0019

620.178.16

AUTHOR: Khrushchov, M. M. 44, 55

TITLE: On certain unsolved metallographic problems of the wear of metals

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 8. 1965, 17-19

TOPIC TAGS: wear, friction, metal surface, sandpaper friction, relative wear resistance, plastic deformation, dynamic load

ABSTRACT: Despite recent numerous investigations of the wear of metals, many aspects of friction and wear of the metals used in the mass-produced industrial, construction, agricultural and other machinery still remain unsolved. Thus, for example, it is unclear why steels in metastable state (following hardening and tempering) are an exception from the rule that relative wear resistance ϵ , determined for the sandpaper friction of different materials (including technically pure metals and steels in annealed form, alloys, minerals, certain chemical compounds) is linked to the modulus of normal elasticity E by the unambiguous relation $\epsilon = aE^n$, where a and n are the constants of a given material. Another question is whether the work hardening and increase in the hardness of metals under load in the presence of certain conditions of friction leading to plastic deformation and intensive flowage of the surface layer are of the same kind as the hardening achieved

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ACCESSION NR: AP5020705

with other methods of plastic deformation or have their own specific features? How much validity is there in the theory that reverse elastic deformation of two contacting metals sets in once the load is removed? And how much validity is there in the theory that the very nature of friction is attributable to the need to disrupt the interlocking bonds between metals that form on microareas of their mutual direct contact, in order to assure relative displacement under load? This hypothesis could be verified with the aid of a radiographic analysis of transfer and an electron microscopic and X-ray micrographic examination of the composition of microvolumes of metals in the areas of contact. Further, under certain conditions of service the material of a work part operating with friction under dynamic loads is particularly susceptible to wear and therefore must be both very hard and resistant to brittle fracture. There is a need to further refine the methods of quantitative estimate of the degree of brittleness of alloys and of their individual structural components; this would be of major importance to, e.g. the development of hard build-on alloys used to coat the work surface of many parts such as the beaters of crushers, the blades of plows used for rocky soils, etc. Another problem is to clarify such still relatively uninvestigated specific conditions of the work of metals with friction as: locality of surface heating (which leads to the appearance

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L 00853-66

ACCESSION NR: AP5020705

of high volume stresses in isolated areas of the metal²⁶); the possibility of rapid heating to high temperatures; the possibility of a particularly rapid cooling of the heated volumes; the presence of high temperature gradients; the extensive plastic deformation of the surface layer; the change in composition owing to diffusion during interaction with environment. These conditions are completely different in intensity, and in their effect on the properties and structure of metals, from the well-investigated conditions accompanying the technological hot and cold working of metals, and, moreover, their effect, both individually and in combinations, is still largely unknown and constitutes an extremely broad field for further investigation. There also exist certain other unsolved metallographic aspects of the problem of the wear resistance of materials; in a number of cases they adjoin other fields such as metallurgy, physical chemistry, and physics, since the problem itself stands at the boundary between several disciplines. Orig. art. has: 1 photo.

ASSOCIATION: Institut mashinovedeniya (Institute of Mechanical Engineering)⁴⁴⁵⁵

SUBMITTED: 00

ENCL: 00

SUB CODE: MM, SS

NR REF SOV: 002

OTHER: 000

Card 3/3

L 3563-66 EWT(d)/EWT(m)/EWP(w)/EPF(c)/EWP(v)/I/EWP(t)/EWP(k)/EWP(h)/EWP(b)/

ACCESSION NR: AT5022672 EWP(1) IJP(c) JD/DJ/CS UR/0000/65/000/000/0138/0142

AUTHORS: Khrushchov, M. M.; Babichev, M. A.

TITLE: Some results of the investigation of abrasive wear of materials

SOURCE: AN SSSR. Nauchnyy sovet po treniyu i smazkam. Teoriya treniya i iznosa (Theory of friction and wear). Moscow, Izd-vo Nauka, 1965, 138-142

TOPIC TAGS: abrasive wear, metal wear, friction wear / Kh4 B friction machine

ABSTRACT: A method for studying the abrasive wear of materials on friction machine Kh4-B was developed and used to determine certain wear relationships. In this method the tested material is drawn over stationary abrasive particles with fresh abrasive area continuously available. From experiments it has been established that the volume wear or linear wear (constant area) is directly proportional to the specific load and the length of friction path

$$\Delta l = cp \Delta S.$$

It was found that the relative wear resistance $\Delta l_s / \Delta l_M = \epsilon$ (where s, M refer to a standard material and the tested material respectively) is a strong function of relative hardness H_M and H_a (H_a = abrasive material hardness) as shown in Fig. 1

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ACCESSION NR: AT5022672

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on the Enclosure. There is no wear in region I, sharp wear increase in region II, and fairly constant wear for $H_a > kH_M$ (region III). For metals $K = 1.4-1.6$.

Experiments by the authors indicate also that a similar behavior is true for non-metals (absolute wear in both cases also depends on other properties of abrasives such as size, frequency, etc). Curves of ϵ as a function of material hardness were obtained for a large number of metals and minerals. It was found that:

- 1) the curve for minerals had a slope 11.4 times smaller than that for metals;
- 2) ϵ was unaffected by residual stresses and work hardening and for a large number of metals and minerals had the relation

$$\epsilon = 0.49 \cdot 10^{-4} E^{1.3}$$

(ϵ referred to tin alloy); 3) the characteristic number $\epsilon \cdot 10^2/H$ for pure metals was 13.74 and for minerals 1.20. Orig. art. has: 3 figures and 3 formulas.

ASSOCIATION: Nauchnyy sovet po treniyu i smazkam, AN SSSR (Scientific Committee on Friction and Lubrication, AN SSSR)

SUBMITTED: 18May65

ENCL: 01

SUB CODE: MT
MM

NO REF SOV: 003

OTHER: 000

Card 2/3

L-3563-66

ACCESSION NR: AT5022672

ENCLOSURE: 01

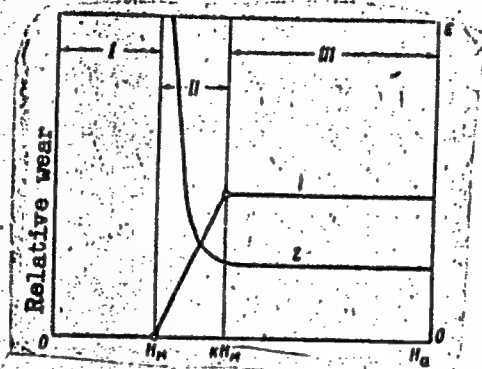


Fig. 1.

Wear (1) and wear resistance (2) of material with hardness
 H_M vs H_a

Card 3/3

1. KHROUCHOV, N. A.
2. USSR (600)
4. Ore Deposits
7. Vertical zonal structure of certain ore deposits. Zap. Vses. min. ob-va 82, No. 1, 1953.
9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

KHRUSHCHOV, N.A.

Control of chemical laboratory work by means of standard specimen.
analyses. Razved. i skh.nedr 20 no.6:22-26 M-D '54. (MIRA 9:2)
(Ores--Sampling and estimation)

BOUS, A.A.; BRITAYEV, M.D.; GRECHUKHIN, N.A.; KREYTER, V.M., glavnyy red.;
SHATALOV, Ye.T., red.; YEROFEYEV, B.N., red.; ZENKOV, D.A., red.;
KRASNIKOV, V.I., red.; NIFONTOV, R.V.; SMIRNOV, V.I., red.;
KHRUSHCHOV, N.A., red; YAKZHIN, A.A., red.; PROKOP'YEV, A.P., red;
NEMANOVA, G.P., red.izd-va; PEN'KOVA, S.L., tekhn.red.

[Prospecting for beryllium, tantalum, and niobium deposits] Razvedka
mestorozhdenii berillia, tantala i niobia. Moskva, gos. nauchn.-
tekh, uzd-vo literatury po geologii i okhrane neдр. 1957 94 p.
(Moscow. Vsesoyuznyi nauchno-issledovatel'skii institut mineral'nogo
syr'ia. Metodicheskie ukazaniia po proizvodstvu geologo-razvedochnykh
rabot, no.2).

(MIRA 11:3)

(Ore deposits) (Prospecting)

BOZINSKIY, A.P.; BRITAYEV, M.D.; KOMISSAROV, A.K.; KATKOVSKIY, G.S.; SEDOVA,
V.I.; SHCHERBAKOV, A.V.; KREYTER, V.M., glavnyy red.; SHATALOV,
Ye.T., zamestitel' glavnogo red.; YEROFYEV, B.N., red.; ZENKOV,
D.A., red.; KRASNIKOV, V.I., red.; NIFONTOV, P.V., red.; SMIRNOV,
V.I., red.; KHRUSHCHOV, N.A., red.; YAKZHIN, A.A., red.; OVCHINNIKOVA,
S.V., red. izd-va; AVERKIYEVA, T.A., tekhn. red.

[Prospecting for gold ore deposits] Razvedka zolotorudnykh mestorozh-
denii. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po geol. i okhrane
nedr, 1957. 103 p. (Moscow. Vsesoiuznyi nauchno-issledovatel'skii
institut mineral'nogo syria. Metodicheskie ukazaniia po proizvodstvu
geologo-razvedochnykh rabot, no.1). (MIRA 11:1)

(Gold ores) (Prospecting)

ROZHKOV, I.S.; RUSANOV, B.S.; KRMYTER, V.M., glavnyy red.; SHATALOV, Ye.T.,
zamestitel' glavnogo red.; YEROFEEV, B.N., red.; ZENKOV, D.A., red.;
KRASNIKOV, V.I., red.; NIFONTOV, R.V., red.; SMIRNOV, V.I., red.;
KHRUSHCHOV, N.A., red.; YAKZHIN, A.A., red.; VLASOVA, S.M., red.;
AVMERKIYEVA, T.A., tekhn. red.

[Prospecting for placer deposits of gold, platinum, tin, tungsten,
titanium, tantalum, and niobium] Razvedka rossypnykh mestorozhdenii
zolota, platiny, olova, vol'frama, titana, tantala i niobiia. Moskva,
Gos. nauchno-tekhn. izd-vo lit-ry po geol. i okhrane neдр, 1957.
108 p. (Metodicheskiy ukazaniia po proizvodstvu geologo-razvedochnykh
rabot, no.12).

(MIRA 11:1)

(Ore deposits)